IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

First Named Inventor	: Philipp H. Schmid et al.	Appeal No.
Appln. No.	: 09/759,474	
Filed	: January 12, 2001	Group Art Unit: 2626
For	: METHOD AND APPARATUS UTILIZING SPEECH GRAMMAR RULES WRITTEN IN A MARKUP LANGUAGE	Examiner: Opsasnick
Docket No.	: M61.12-0321	

SUPPLEMENTAL BRIEF FOR APPELLANTS

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PATENT ATTORNEY

Sir:

This is a Supplemental Brief for Appellants, which is being filed in response to a Notice of Non-Compliant Appeal Brief issued on October 22, 2006. This Supplemental Brief corrects two headings as required in the Notice. This is an Appeal of the Final Office Action dated May 11, 2006 in which claims 1-8, 10-14 and 16-43 were rejected.

REAL PARTY IN INTEREST

Microsoft Corporation, a corporation organized under the laws of the state of Washington, and having offices at One Microsoft Way, Redmond, Washington 98052, has acquired the entire right, title and interest in and to the invention, the application, and any and all patents to be obtained therefor, as set forth in the Assignment filed with the parent application of this patent application and recorded on Reel 11464, frame 414.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

STATUS OF THE CLAIMS

I. Total number of claims in the application.

Claims in the application are: 1-8, 10-14, 16-43

II. Status of all the claims.

A.	Claims cancelled:	9, 15
B.	Claims withdrawn but not cancelled:	---
C.	Claims pending:	1-8, 10-14, 16-43
D.	Claims allowed:	---
E.	Claims rejected:	1-8, 10-14, 16-43
F.	Claims Objected to:	---

III. Claims on appeal

The claims on appeal are: 1-8, 10-14, 16-43

STATUS OF AMENDMENTS

No amendments were filed after the Final Office Action.

SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim 1 provides a speech recognition interface for a speech recognition engine. The interface comprises a compiler 210 that produces a binary grammar 208 from a markup language grammar 212 written in a markup language.(Fig. 2, page 11, lines 3-24) The markup language grammar comprises rule tags 510 that delimit a grammar structure that may be referenced by other grammar structures within the markup language grammar by a name attribute of the rule tags.(Fig. 5, page 22, lines 7-13, page 19, lines 7-11) The name attribute is set within one of the rule tags.(Fig. 5) A grammar engine 202 provides the binary grammar 208 to the speech recognition engine 204.

Claim 13 is directed to computer readable medium having instructions comprising an application 200 providing a speech

interface that expects to receive speech from the user as possible input. A speech grammar 212 associated with the application is also provided and defines valid word patterns for the user's speech.(Fig. 2, Page 11, lines 3-24) The speech grammar is written in a markup language such that a start tag 628 and an end tag 630 having a first tag name that delimit a set of elements of the grammar are located between a second start tag 620 and a second end tag 622 that have a second tag name.(Fig. 6)

The speech grammar comprises rule tags that delimit a valid grammar structure for the grammar and that comprise a name attribute that is set equal to a name by which the grammar structure can be referenced..(Fig. 5, page 22, lines 7-13, page 19, lines 7-11) The name attribute is set within a rule tag.(Fig. 5)

Independent claim 30 is directed to a method of defining a grammar for speech recognition. The method includes delimiting a grammar structure within rule tags 510, 512 that conform to a markup language.(FIG. 5, page 19, lines 8-14) The method further includes delimiting all of the rule tags for the grammar within grammar tags 500,700 that conform to a markup language. (FIGS. 5 and 7, page 17, line 21- page 18, line 10).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-8, 10-14, 16-18, 20 and 22-43 were rejected under 35 U.S.C. §103(a) as being unpatentable over Brown et al. (U.S. Patent No. 6,587,822, hereinafter Brown), in view of Ladd et al. (U.S. Patent Number 6,470,317, hereinafter Ladd), in view of Parks (U.S. Patent Number 6,038,573), and in further view of Sakata (U.S. Patent Number 6,085,190)..

Claims 19 and 21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Brown in view of Ladd in view of Parks in view of Sakata in further view of Martin (U.S. Patent Number 5,642,519).

ARGUMENT

§103(a) Rejection of claims 1-8, 10-14, 16-18, 20 and 22-43

Claims 1-8

Independent claim 1 provides a speech recognition interface for a speech recognition engine. The interface comprises a compiler that produces a binary grammar from a markup language grammar written in a markup language. The markup language grammar comprises rule tags that delimit a grammar structure that may be referenced by other grammar structures within the markup language grammar by a name attribute of the rule tags. The name attribute is set within one of the rule tags. A grammar engine provides the binary grammar to the speech recognition engine.

An example of a markup language grammar as found in claim 1 is shown in FIGS. 5-7. An example of rule tags in the grammar are found in FIG. 7 as:

```
<RULE NAME="rank">
      <LN PROPNAME="rank" PROPID="RANK">
          <PN VAL="1">ace</PN>
          <PN VAL="2">two</PN>
          <PN VAL="3">three</PN>
          <PN VAL="4">four</PN>
          <PN VAL="5">five</PN>
          <PN VAL="6">six</PN>
          <PN VAL="7">seven</PN>
          <PN VAL="8">eight</PN>
          <PN VAL="9">nine</PN>
          <PN VAL="10">ten</PN>
          <PN VAL="11">jack</PN>
          <PN VAL="12">queen</PN>
          <PN VAL="13">king</PN>
          <PN VAL="12">lady</PN>
          <PN VAL="13">emperor</PN>
      </LN>
</RULE>
```

where <RULE NAME="Rank"> is a starting rule tag and </RULE> is an ending rule tag. In the starting rule tag, "NAME" is the name attribute, which is set to a value of "Rank". The elements delimited by the <RULE NAME="Rank"> tag and the </RULE> tag are the grammar structure. This grammar structure can be referenced using the name attribute "Rank". For example, in FIG. 6, this grammar structure is referenced as <RULEREF NAME="rank"/>.

Independent claim 1 is not shown or suggested by the combination of Brown, Ladd, Parks, and Sakata. In particular, the combination of references does not show or suggest rule tags that delimit a grammar structure that may be referenced by a name attribute of the rule tags, where the name attribute is set within one of the rule tags.

In Sakata, HTML pages are shown with <Input> tags that include a Name attribute. In Parks, grammar rules are provided that describe the content of documents written in a News Story Markup Language that includes tags. In the Final Office Action, it was asserted that defining a name attribute in the tags shown in Parks would form the present invention and that it would be obvious to alter Parks in this way. Appellants respectfully dispute both of these assertions.

First, placing name attributes in the tags shown in Parks would not form the invention of claim 1.

The grammar rules developed in Parks are used to parse a document that includes tags. For example, a document in Parks may include the following line: **<cell>**text of the cell**</cell>**, where <cell> is a start tag, </cell> is an end tag, and "text of the cell" is text found between the two tags. In order to parse such text, Parks has developed grammar rules that define sequences of tags and text. During parsing, Parks attempts to match sequences of tags and text in the document to sequences of tags and text in each of the grammar rules.

In Parks, a Backus-Naur notation is used to describe the

grammar rules. In this notation, the name of the grammar structure is found on the left-hand side of a definition symbol (::=) and the grammar structure represented by the rule name is found on the right-hand side of the definition symbol. For example, in Fig. 4A of Parks, the element marked as LOOK 340 has the following grammar rule:

look_tag ::= <look> {form_tag} </look>

where the name of the rule is "look_tag" and the structure represented by that name is "<look> {form_tag} </look>". The element {form_tag} is a reference to another rule named form_tag. This rule is defined as:

form_tag ::=<form>{row_tag}</form>

Using the reference to form_tag, the look_tag rule is able to incorporate the entire structure on the right-hand side of the form_tag rule into its structure. Thus, in order to match the look_tag rule, the parser must find the following sequence:

<look><form>{row_tag}</form></look>

Note that in Parks, a reference to another rule is made by referencing the name on the left-hand side of the grammar rule definition. For instance, in the example above, the look_tag rule references "form_tag" and does not reference anything on the right-hand side of the rule.

Because of this, if a name attribute were added within the tags on the right-hand side of the definition symbol in Parks, as suggested by the examiner, that name attribute would not be used to reference the grammar structure. For example, if the form_tag rule were changed to add a Name attribute such that:

form_tag ::=<form name=myform>{row_tag}</form>

the look_tag rule would still reference the form_tag rule using {form_tag}. It would not reference the rule using the name attribute "myform". If it attempted to reference the rule using the "myform" attribute, the Parks system would return an error because it would not be able to find a rule with that name. The Backus-Naur format of Parks simply does not allow one rule to reference another rule using any information on the right-hand side of the rule.

Thus, the combination suggested by the Examiner would not produce the invention of claim 1 because it would not show or suggest rule tags that delimit a grammar structure that may be referenced by a name attribute of the rule tags, where the name attribute is set within one of the rule tags.

In addition, it would not be obvious to those skilled in the art to add name attributes to the tags in Parks. Under Parks, attributes found in the tags of actual documents are not placed in the grammar. For example, in the <cell> tags of FIG. 5 of Parks there is an "idref" attribute. However, in the grammar rule "cell_tag" of Fig. 4A, which includes the <cell> tag, this attribute is not listed. Thus, Parks teaches away from including attributes in tags in grammar definitions.

By providing name attributes in rule tags, the invention of claim 1 provides a simple way to define a grammar without relying on the Backus-Naur format. As noted in the present specification on Page 2, the Backus-Naur format is complicated to use and makes it difficult to understand the structure of a grammar.

Since none of the cited references show or suggest rule tags that delimit a grammar structure that may be referenced by other grammar structures within a markup language grammar by a

name attribute of the rule tags wherein the name attribute is set within one of the rule tags, the combination of the cited references does not show or suggest the inventions of claims 1-8.

Claim 10

Dependent claim 10 depends from claim 1 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

Claim 10 includes a further limitation wherein the rule tag further comprises an interpreter attribute that indicates that code is to be executed when the grammar structure delimited by the rule tag is recognized by the speech recognition engine. (See page 20, line 19 - page 21, line 9)

None of the cited references show or suggest such an interpreter attribute. In the Final Office Action, col. 13, line 25 - col. 14, line 64 of Brown was cited to reject claim 10. However, the cited section makes no mention of an attribute in a rule tag that indicates that code is to be executed when a grammar structure delimited by the rule tag is recognized. Instead, this section of Brown discusses grammars that are written between a pair of <GRAMMAR> tags and that define word sequences that will trigger the activation of a hyperlink in a web page. There is no mention of a rule tag or an attribute within a rule tag that indicates that code is to be executed when a grammar structure delimited by the rule tags is recognized. As such, claim 10 is additionally patentable over the cited combination of art.

Claim 11

Dependent claim 11 depends from claim 10 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

Claim 11 includes a further limitation wherein the grammar includes a resource tag that indicates at least one resource that

is to be provided to the code associated with the interpreter attribute.(See page 22, line 20 - page 23, line 8).

None of the cited references show or suggest such a resource tag. In the Final Office Action, col. 13, line 25 - col. 14, line 64 of Brown was cited to reject claim 11. However, the cited section makes no mention of tags that indicate a resource to be provided to code associated with an interpreter attribute of a rule tag. Instead, this section of Brown discusses grammars that are written between a pair of <GRAMMAR> tags and that define word sequences that will trigger the activation of a hyperlink in a web page. Although the cited section states that the grammar may be placed within a file, it does not show anything that could be considered a resource tag that indicates at least one resource that is to be provided to code associated with an interpreter attribute. As such, claim 11 is additionally patentable over the cited combination of art.

Claim 12

Dependent claim 12 depends from claim 1 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

Claim 12 includes a further limitation wherein the grammar further comprises a script tag that delimits script code to be interpreted when the grammar structure delimited by a rule tag is recognized by the speech recognition engine.(See page 23, lines 10-22).

None of the cited references show or suggest such a script tag. In the Final Office Action, col. 13, line 25 - col. 14, line 64 of Brown was cited to reject claim 12. However, the cited section makes no mention of script tags that delimit script code and further, makes no mention of script code that is to be executed when a grammar structure delimited by rule tags is recognized. Instead, this section of Brown discusses grammars

that are written between a pair of <GRAMMAR> tags and that define word sequences that will trigger the activation of a hyperlink in a web page. Nothing in the discussion of the Brown grammars could be considered to be tags that delimit script code that is to be executed when a grammar structure delimited by rule tags is recognized. As such, claim 12 is additionally patentable over the cited combination of art.

Claim 13, 14, 22, 23, 24, 25, and 27

Independent claim 13 is directed to a computer-readable medium having computer-executable instructions comprising an application providing a speech interface that expects to receive speech from the user as possible input. A speech grammar associated with the application is also provided and defines valid word patterns for the user's speech. The speech grammar is written in a markup language such that a start tag and an end tag having a first tag name that delimit a set of elements of the grammar are located between a second start tag and a second end tag that have a second tag name. The speech grammar comprises rule tags that delimit a valid grammar structure for the grammar and that comprise a name attribute that is set equal to a name by which the grammar structure can be referenced. The name attribute is set within a rule tag.

An example of a grammar written in a markup language is shown in FIGS. 5-7. In FIG. 6, the following structure is shown:

```
<P>
     <RULEREF NAME="rank"/>
     <O>
          <P>of</P>
          <LN PROPNAME="suit" PROPID="SUIT">
               <PN VAL="0">clubs</PN>
               <PN VAL="1">hearts</PN>
               <PN VAL="2">diamonds</PN>
               <PN VAL="3">spades</PN>
```

```
                    </LN>
                </O>
            </P>
```

In this structure the start tag <O> and end tag </O> have a first tag name "O" and are located between start tag <P> and end tag </P> that have a second tag name "P". The grammar also includes rule tags that delimit a valid grammar structure such as in FIG. 7:

```
<RULE NAME="rank">
      <LN PROPNAME="rank" PROPID="RANK">
          <PN VAL="1">ace</PN>
          <PN VAL="2">two</PN>
          <PN VAL="3">three</PN>
          <PN VAL="4">four</PN>
          <PN VAL="5">five</PN>
          <PN VAL="6">six</PN>
          <PN VAL="7">seven</PN>
          <PN VAL="8">eight</PN>
          <PN VAL="9">nine</PN>
          <PN VAL="10">ten</PN>
          <PN VAL="11">jack</PN>
          <PN VAL="12">queen</PN>
          <PN VAL="13">king</PN>
          <PN VAL="12">lady</PN>
          <PN VAL="13">emperor</PN>
      </LN>
</RULE>
```

where <RULE NAME="Rank"> is a starting rule tag and </RULE> is an ending rule tag. In the starting rule tag, "NAME" is the name attribute, which is set to a value of "Rank". The elements delimited by the <RULE NAME="Rank"> tag and the </RULE> tag are the grammar structure, which can be referenced by using the name attribute value "Rank" as in <RULEREF NAME="rank"/> as shown in FIG. 6.

Claim 13 is not shown or suggested in the combination of Brown, Ladd, Parks and Sakata. In particular, the combination does not show or suggest rule tags that delimit a grammar

structure that may be referenced by a name attribute of the rule tags, where the name attribute is set within one of the rule tags.

As noted above, the Examiner's suggestion that the Name attribute of Sakata could be added to the tags in Parks would not produce the present invention because even if a Name attribute were added to the tags in Parks it could not be used to reference the structure delimited by the tags. Instead, Parks only allows references to the name of the grammar rule on the left-hand side of the rule definition. Further, as noted above, Parks teaches that attributes for tags should not be included in the grammar definitions. As such, those skilled in the art would not be motivated to add the Name attribute of Sakata to the grammar definitions of Parks.

Since none of the cited references show or suggest rule tags that have a name attribute set within one of the rule tags that can be used to reference the structure delimited by the rule tags, the combination of the cited references does not show or suggest the invention of claim 13 or claims 14, 22, 23, 24, 25 and 27, which depend therefrom.

Claim 16

Claim 16 depends from claim 13 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

In claim 16, the speech grammar further comprises rule reference tags that provide a reference to one grammar structure from within a second grammar structure. (See page 23, line 23 - page 25, line 26 of the present specification)

None of the cited references show or suggest such rule reference tags. In the Final Office Action, Col. 14, lines 30-50 of Brown were cited to reject claim 16. However, the cited section makes no mention of rule reference tags that provide a reference to one grammar structure from within another grammar structure. Instead, the only tags shown in the cited section of

Brown are <Grammar> tags. These tags do not provide a reference to one grammar structure from within another grammar structure. As such, claim 16 is not shown or suggested by the combination of cited references.

Claim 17

Claim 17 depends from claim 13 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

Claim 17 includes a further limitation wherein the rule tag further comprises an interpreter attribute that indicates whether code associated with the rule tags should be invoked when the grammar structure delimited by the rule tags is recognized.

None of the cited references show or suggest such an interpreter attribute. In the Final Office Action, col. 13, line 25 - col. 14, line 64 of Brown was cited to reject claim 17. However, the cited section makes no mention of an attribute in a rule tag that indicates that code is to be executed when a grammar structure delimited by the rule tag is recognized. Instead, this section of Brown discusses grammars that are written between a pair of <GRAMMAR> tags and that define word sequences that will trigger the activation of a hyperlink in a web page. There is no mention of a rule tag or an attribute within a rule tag that indicates that code is to be executed when a grammar structure delimited by the rule tags is recognized. As such, claim 17 is additionally patentable over the cited combination of art.

Claim 18

Dependent claim 18 depends from claim 13 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

Claim 18 includes a further limitation wherein the grammar includes resource tags that delimit the identity of a resource that is to be provided to the code associated with a rule tag.

None of the cited references show or suggest such resource tags. In the Final Office Action, col. 13, lines 18-36 of Brown was cited to reject claim 18. However, the cited section makes no mention of tags that delimit the identity of a resource to be provided to code associated with a rule tag. Instead, this section of Brown discusses hash tables that map spoken phrases to URLs or commands. There is nothing in the cited section that could be considered a resource tag that indicates at least one resource that is to be provided to code associated with an interpreter attribute. As such, claim 18 is additionally patentable over the cited combination of art.

Claim 20

Dependent claim 20 depends from claim 13 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

In claim 20, the grammar further comprises script tags delimiting script code that is to be interpreted when the grammar structure delimited by a pair of rule tags is recognized from a speech signal.

None of the cited references show or suggest such script tags. In the Final Office Action, no particular part of any reference was cited to reject claim 20. As such, claim 20 is additionally patentable over the cited combination of art.

Claim 26

Dependent claim 26 depends from claim 25 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

In claim 26, phrase tags that delimit at least one word of a grammar structure comprise a semantic property name attribute and a semantic property value attribute such that the semantic property represented by the semantic property name attribute is

set equal to the semantic property value when the at least one word delimited by the phrase tags is recognized from a speech signal. (See page 26, line 23 - page 27, line 9)

None of the references show or suggest such semantic property attributes in phrase tags. In the Final Office Action, no particular part of any of the references was cited to support this rejection. As such, claim 26 is additionally patentable over the cited combination of art.

Claim 28

Dependent claim 28 depends from claim 27 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

In claim 28, list tags that delimit a list of alternative grammar structures comprise a semantic property name attribute and a semantic property value attribute such that the semantic property represented by the semantic property name attribute is set equal to the semantic property value when at least one of the alternative grammar structures delimited by the list tags is recognized from a speech signal. (see page 31, lines 10-23)

None of the references show or suggest such semantic property attributes in list tags. In the Final Office Action, col. 14, lines 30-50 of Brown was cited to reject claim 28. However, the cited section makes no mention of list tags or of semantic property attributes in list tags. The only tags described in the cited section are <Grammar> tags, which do not include semantic property attributes. As such, claim 28 is additionally patentable over the cited combination of art.

Claim 29

Dependent claim 29 depends from claim 13 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

In claim 29, the grammar further comprises optional tags that delimit a grammar structure that can be but does not have to be recognized from a speech signal in order for a grammar structure that contains the optional tag to be recognized from a speech signal. (See page 32, line 11 - page 33, line 14)

None of the references show or suggest such optional tags. In the Final Office Action, col. 13, lines 53-62 and col. 14, lines 44-50 of Brown were cited to reject claim 29. However, the cited sections make no mention of optional tags that delimit a grammar structure. In the cited section, the only tags discussed are the <Grammar> tags. However, these cannot operate as optional tags as found in claim 29 because there is no grammar structure that contains the <Grammar> tags. Instead, the <Grammar> tags in Brown are the outermost tags. As such, claim 29 is additionally patentable over the cited combination of art.

Claims 30, 35, 36, 38 and 41-43

Independent claim 30 is directed to a method of defining a grammar for speech recognition. The method includes delimiting a grammar structure with rule tags that conform to a markup language. The method further includes delimiting all of the rule tags for the grammar with grammar tags that conform to the markup language.

In the example of FIGS. 5-7 of the present application, grammar structures are delimited with rule tags <rule> and </rule>, and all of the rule tags are delimited with <grammar> and </grammar> tags.

None of Brown, Ladd, Parks or Sakata show or suggest delimiting a grammar structure with rule tags that conform to a markup language and then delimiting all of the rule tags for the grammar with grammar tags. Further, there is no suggestion in the combination of these references for defining a grammar in this manner.

In the Final Office Action, it was suggested that the tags of Brown, Ladd, Parks and Sakata could be combined to form the invention of claim 30. Appellants respectfully dispute this suggestion.

Brown suggests delimiting a grammar in <Grammar> tags on col. 13, lines 57-58. However, there is no suggestion for placing tags that delimit a grammar structure within the <grammar> tags as part of defining a grammar for speech recognition. In particular, there is no suggestion for placing the tags of Ladd, Parks or Sakata within <grammar> tags to define a grammar for speech recognition.

The tags of Ladd would not be placed within the <grammar> tags of Brown because Ladd delimits its tags by <dialog> tags.(Ladd, col. 16, lines 29-40) In addition, the tags within the <dialog> tags of Ladd include information to be provided to the user, and steps to be taken in the dialog.(See col. 16, line 64 - col. 17, line 15) Thus, the content between the <dialog> tags is not just grammar information, but also includes information to be provided to a user. As such, those skilled in the art would not place the tags from Ladd between <grammar> tags.

Similarly, those skilled in the art would not place the tags in Parks within <grammar> tags to form a grammar for speech recognition. Parks does not provide a speech recognition grammar. Instead the grammar in Parks is used to parse text documents. As such, the tags found in Parks are expected to be found in documents. Since such tags would not be found in speech, those skilled in the art would not place the tags shown in Parks between <grammar> tags to form a grammar for speech recognition.

Lastly, those skilled in the art would not place the tags shown in Sakata between <grammar> tags to form a speech recognition grammar. The tags shown in Sakata are HTML tags that describe the content of documents. They are not used to delimit a grammar structure and as such would not be placed between

<grammar> tags to define a grammar for speech recognition.

Since those skilled in the art would not place the tags in any of Ladd, Parks or Sakata in the <grammar> tags of Brown, the combination of these references would not render the invention of claim 30 obvious.

Claim 31

Dependent claim 31 depends from claim 30 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

In claim 30, a name attribute is set for the rule tags so that the grammar structure can be referred to by the name of the rule tags.

None of the references show or suggest a name attribute in rule tags that allow a grammar structure delimited by the rule tags to be referred to by the name. In the Final Office Action, col. 14, lines 30-50 of Brown was cited in rejecting claim 31. However, the cited section makes no mention of name attributes in rule tags. In fact, the cited section does not mention rule tags at all. Instead, the only tags shown in the cited section of Brown are <Grammar> tags, which do not include a name attribute. As such, claim 31 is additionally patentable over the cited combination of art.

Claim 32

Claim 32 depends from claim 30 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

Claim 32 includes a further limitation wherein delimiting a grammar structure with rule tags further comprises setting an interpreter attribute to indicate that code is to be invoked when the grammar structure delimited by the rule tags is recognized from a speech signal.

None of the cited references show or suggest such an

interpreter attribute. In the Final Office Action, col. 13, lines 53-62 and col. 14, lines 44-50 of Brown were cited to reject claim 32. However, the cited sections make no mention of an attribute in a rule tag that indicates that code is to be executed when a grammar structure delimited by the rule tag is recognized. Instead, the cited sections of Brown discuss grammars that are written between a pair of <GRAMMAR> tags and that define word sequences that will trigger the activation of a hyperlink in a web page. There is no mention of setting a value for an interpreter attribute to indicate that code is to be invoked when a grammar structure delimited by rule tags is recognized. As such, claim 32 is additionally patentable over the cited combination of art.

Claim 33

Dependent claim 33 depends from claim 32 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

Claim 33 includes a further step of delimiting a resource identifier within resource tags within the rule tags to identify a resource to be provided to the code associated with the interpreter attribute.

None of the cited references show or suggest such resource tags. In the Final Office Action, col. 13, lines 18-36 of Brown was cited to reject claim 33. However, the cited section makes no mention of tags that delimit a resource identifier and that are within rule tags. Instead, this section of Brown discusses hash tables that map spoken phrases to URLs or commands. There is nothing in the cited section that could be considered a resource tag that indicates at least one resource that is to be provided to code associated with an interpreter attribute. As such, claim 33 is additionally patentable over the cited combination of art.

Claim 34

Dependent claim 34 depends from claim 30 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

In claim 34, script code is delimited between script tags that are delimited between the rule tags. The script code is to be interpreted when the grammar structure delimited by the rule tags is recognized from a speech signal.

None of the cited references show or suggest script code delimited between script tags that are between rule tags. In the Final Office Action, col. 13, lines 18-36 of Brown was cited to reject claim 34. However, the cited section makes no mention of tags that delimit script code and that are delimited within rule tags. Instead, this section of Brown discusses hash tables that map spoken phrases to URLs or commands. There is nothing in the cited section that could be considered a script tag that delimits a script code and that is between rule tags. As such, claim 34 is additionally patentable over the cited combination of art.

Claim 37

Dependent claim 37 depends from claim 36 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

Claim 37 further comprises setting a semantic property name attribute and a semantic property value attribute in a phrase tag such that the semantic property represented by the semantic property name attribute is set equal to the semantic property value when at least one word delimited by the phrase tags is recognized from a speech signal.

None of the references show or suggest such semantic property attributes in phrase tags. In the Final Office Action, col. 13, lines 18-36 of Brown was cited to reject claim 37. However, the cited section makes no mention of semantic property

attributes in phrase tags. Instead, this section of Brown discusses hash tables that map spoken phrases to URLs or commands. There is no mention of phrase tags, or semantic property name attributes or value attributes in such phrase tags. As such, claim 37 is additionally patentable over the cited combination of art.

Claim 39

Dependent claim 39 depends from claim 38 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

Claim 39 further comprises setting a semantic property name attribute and a semantic property value attribute of list tags such that the semantic property represented by the semantic property name attribute is set equal to the semantic property value when at least one of the alternative grammar sub-structures delimited by the list tags is recognized from a speech signal.

None of the references show or suggest such semantic property attributes in list tags. In the Final Office Action, col. 13, lines 18-36 of Brown was cited as showing claim 39. However, the cited section makes no mention of list tags or of semantic property attributes in list tags. Instead, it simply discusses hash tables. As such, claim 39 is additionally patentable over the cited combination of art.

Claim 40

Dependent claim 40 depends from claim 30 and is additionally patentable over the combination of Brown, Ladd, Parks, and Sakata.

Claim 40 further comprises delimiting an optional grammar sub-structure as optional such that a grammar structure delimited by the rule tags can be recognized from a speech signal regardless of whether the optional grammar sub-structure is recognized from

the speech signal.

None of the references show or suggest delimiting an optional sub-structure as optional. In the Final Office Action, col. 13, lines 18-36 of Brown was cited as showing claim 40. As noted above, the cited section discusses hash tables. The cited section makes no mention of delimiting optional grammar sub-structures as optional. As such, claim 40 is additionally patentable over the cited combination of art.

§103(a) Rejection of claims 19 and 21

Claims 19 and 21

Claims 19 and 21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Brown in view of Ladd in view of Parks in view of Sakata in further view of Martin (U.S. Patent Number 5,642,519).

Claims 19 and 21 depend indirectly from claim 13 and as such include the limitations in claim 13 to rule tags that delimit a grammar structure that may be referenced by a name attribute of the rule tags, where the name attribute is set within one of the rule tags.

As noted above, the combination of Brown, Ladd, Parks, and Sakata does not show these limitations. In particular, the Examiner's suggestion to add the Name attribute of Sakata to the tags in Parks would not produce the invention of claim 13 because even if a Name attribute were added to the tags in Parks, the Name attribute could not be used to reference the structure delimited by the tags. Instead, Parks only allows references to the name of the grammar rule on the left-hand side of the rule definition. Further, as noted above, Parks teaches that attributes for tags should not be included in the grammar definitions. As such, those skilled in the art would not be motivated to add the Name attribute of Sakata to the grammar definitions of Parks.

Martin also fails to show rule tags that delimit a grammar structure that may be referenced by a name attribute of the rule tags, where the name attribute is set within one of the rule tags. Martin uses Bakus-Naur Form (BNF) definitions like Parks. As such, the combination of Martin with Brown, Ladd, Parks and Sakata does not show or suggest the invention of claim 13, or claims 19 and 21, which depend therefrom.

Conclusion

In light of the arguments above, Appellants request that the Board reverse the Examiner's rejection of claims 1-8, 10-14, and 16-43.

Respectfully submitted,

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Claims Appendix

1. A speech recognition interface for a speech recognition engine, the interface comprising:

a compiler that produces a binary grammar from a markup language grammar written in a markup language, the markup language grammar comprising rule tags that delimit a grammar structure that may be referenced by other grammar structures within the markup language grammar by a name attribute of the rule tags wherein the name attribute is set within one of the rule tags;

a grammar engine that provides the binary grammar to the speech recognition engine.

2. The speech recognition interface of claim 1 wherein the markup language grammar is written in an extensible markup language.

3. The speech recognition interface of claim 1 wherein the markup language grammar represents a context-free grammar.

4. The speech recognition interface of claim 1 wherein the markup language grammar comprises a switch grammar tag that indicates to the speech recognition engine to switch to a different grammar during the recognition of at least one word.

5. The speech recognition interface of claim 4 wherein grammar switch tag is a dictation tag that indicates to the speech recognition engine to switch to a dictation grammar.

6. The speech recognition interface of claim 5 wherein the dictation tag indicates to the speech recognition engine to

switch to the dictation grammar during the recognition of more than one word.

7. The speech recognition interface of claim 4 wherein the switch grammar tag is a text buffer tag that indicates to the speech recognition engine to switch to a grammar stored in a text buffer.

8. The speech recognition interface of claim 7 wherein the text buffer comprises a sequence of words and wherein the speech recognition engine identifies a sub-sequence of the words in the sequence of words from an input speech signal.

9. (Canceled)

10. The speech recognition interface of claim 1 wherein the rule tag further comprises an interpreter attribute that indicates that code is to be executed when the grammar structure delimited by the rule tag is recognized by the speech recognition engine.

11. The speech recognition interface of claim 10 wherein the markup language grammar further comprises a resource tag indicating at least one resource to be provided to the code associated with the interpreter attribute.

12. The speech recognition interface of claim 1 wherein the markup language grammar further comprises a script tag that delimits script code to be interpreted when the grammar structure delimited by a rule tag is recognized by the speech recognition engine.

13. A computer-readable medium having computer-interpretable instructions comprising:

an application providing a speech interface that expects to receive speech from the user as possible input; and

a speech grammar associated with the application and defining valid word patterns for the user's speech, the speech grammar written in a markup language such that a start tag and an end tag having a first tag name that delimit a set of elements of the grammar are located between a second start tag and a second end tag that have a second tag name, the speech grammar comprising rule tags that delimit a valid grammar structure for the grammar and that comprise a name attribute set within a rule tag that is set equal to a name by which the grammar structure can be referenced within the speech grammar.

14. The computer-readable medium of claim 13 wherein the speech grammar comprises grammar tags representing the outermost tags of the grammar.

15. (Canceled)

16. The computer-readable medium of claim 13 wherein the speech grammar further comprises rule reference tags that provide a reference to one grammar structure from within a second grammar structure.

17. The computer-readable medium of claim 13 wherein the rule tags further comprise an interpreter attribute that indicates whether code associated with the rule tags should be

invoked when the grammar structure delimited by the rule tags is recognized as from a speech signal.

18. The computer-readable medium of claim 17 wherein the speech grammar further comprises resource tags that delimit the identity of a resource that is to be provided to the code associated with a rule tag.

19. The computer-readable medium of claim 17 wherein the code associated with rule tags receives values of semantic properties that have been set because the grammar structure delimited by the rule tags has been recognized from the speech signal.

20. The computer-readable medium of claim 13 wherein the speech grammar further comprises script tags delimiting script code that is to be interpreted when the grammar structure delimited by a pair of rule tags is recognized from a speech signal.

21. The computer-readable medium of claim 13 wherein the rule tags comprise a semantic property name attribute and a semantic property value attribute such that the semantic property represented by the semantic property name is set equal to the semantic property value when the grammar structure delimited by the rule tags is recognized from a speech signal.

22. The computer-readable medium of claim 13 wherein the speech grammar further comprises grammar switch tags that indicate that a different grammar should be used during a part of the speech recognition.

23. The computer-readable medium of claim 22 wherein the grammar switch tags comprise dictation tags that indicate that a dictation grammar should be used for the recognition of at least one word in the grammar structure.

24. The computer-readable medium of claim 22 wherein the grammar switch tags comprise text buffer tags that indicate that sub-sequences of words in a sequence of words should be used as a grammar for the recognition of at least one word in the grammar structure.

25. The computer-readable medium of claim 13 wherein the speech grammar further comprises phrase tags that delimit at least one word in a grammar structure.

26. The computer-readable medium of claim 25 wherein the phrase tags comprise a semantic property name attribute and a semantic property value attribute such that the semantic property represented by the semantic property name is set equal to the semantic property value when the at least one word delimited by the phrase tags is recognized from a speech signal.

27. The computer-readable medium of claim 13 wherein the speech grammar further comprises list tags that delimit a list of alternative grammar structures.

28. The computer-readable medium of claim 27 wherein the list tags comprise a semantic property name attribute and a semantic property value attribute such that the semantic property represented by the semantic property name is set equal to the semantic property value when at least one of the alternative grammar structures delimited by the list tags is recognized from a speech signal.

29. The computer-readable medium of claim 13 wherein the grammar comprises optional tags that delimit a grammar structure that can be but does not have to be recognized from a speech signal in order for a grammar structure that contains the optional tag to be recognized from the speech signal.

30. A method of defining a grammar for speech recognition, the method comprising:

delimiting a grammar structure with rule tags that conform to a markup language;

delimiting all of the rule tags for the grammar with grammar tags that conform to a markup language.

31. The method of claim 30 wherein delimiting a grammar structure with rule tags comprises setting a name attribute of the rule tags so that the grammar structure can be referred to by the name of the rule tags.

32. The method of claim 30 wherein delimiting the grammar structure with rule tags comprises setting a value for an interpreter attribute to indicate that code is to be invoked when the grammar structure delimited by the rule tags is recognized from a speech signal.

33. The method of claim 32 wherein delimiting the grammar structure with rule tags further comprises delimiting a resource identifier within resource tags within the rule tags to identify a resource to be provided to the code associated with the interpreter attribute.

34. The method of claim 30 wherein delimiting the grammar structure with rule tags comprises delimiting script code within

script tags between the rule tags, the script code to be interpreted when the grammar structure delimited by the rule tags is recognized from a speech signal.

35. The method of claim 30 wherein delimiting the grammar structure with rule tags comprises setting a semantic property identifier attribute of the rule tag such that the semantic property identified by the semantic property identifier attribute is set equal to a value when the grammar structure delimited by the rule tags is recognized from a speech signal.

36. The method of claim 30 wherein delimiting the grammar structure with rule tags comprises delimiting at least one word of the grammar structure with phrase tags.

37. The method of claim 36 wherein delimiting at least one word of the grammar structure with phrase tags comprises setting a semantic property identifier attribute and a semantic property value attribute of the phrase tag such that the semantic property identified by the semantic property identifier attribute is set equal to semantic property value when the at least one word delimited by the phrase tags is recognized from a speech signal.

38. The method of claim 30 wherein delimiting the grammar structure with rule tags comprises delimiting a list of alternative grammar sub-structures with list tags.

39. The method of claim 38 wherein delimiting a list of alternative grammar sub-structures with list tags comprises setting a semantic property identifier attribute of the list tag such that the semantic property identified by the semantic property identifier attribute is set equal to a value when at least one of the grammar sub-structures in the list of

alternative grammar sub-structures is recognized from a speech signal.

40. The method of claim 30 wherein delimiting the grammar structure with rule tags comprises delimiting an optional grammar sub-structure as optional such that the grammar structure delimited by the rule tags can be recognized from a speech signal regardless of whether the optional grammar sub-structure is recognized from the speech signal.

41. The method of claim 30 wherein delimiting the grammar structure with rule tags comprises including a grammar switch tag in the grammar structure to indicate that a different grammar should be used to recognize at least one word from a speech signal.

42. The method of claim 41 wherein including a grammar switch tag comprises including a dictation tag to indicate that a dictation grammar should be used to recognize at least one word from the speech signal.

43. The method of claim 41 wherein including a grammar switch tag comprises including a text buffer tag to indicate that sub-sequences of words from a sequence of words should be used to recognize at least one word from the speech signal.

Appendix B - EVIDENCE APPENDIX

(No Evidence)

Appendix C - RELATED PROCEEDINGS

(No Related Proceedings)